Space Weather Forecast

Issued on Saturday, 10 September 2022 at 13:29 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: No significant activity.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity was Low over the past 24 hours, with only small common class flares. There are currently seven numbered and one unnumbered regions on the visible disc. Most regions are small stable, or showing signs of decay, although two regions are showing some signs of growth, one a small region in the southeast and another a new region in the northwest A faint, slow, fairly wide possible CME was observed off the northwest of the solar disc on the 9th. However, there is no obvious Earth sided source. There is no evidence of any other Earth-directed Coronal Mass Ejections (CMEs).

Solar Wind / Geomagnetic Activity: The solar wind was indicative of a very slowly receding fast wind from a coronal hole. The solar wind speed was slightly elevated, at around 400-450 km/s. The magnetic field of the wind remained weak, however the north--south component, while weak, exhibited a number of rotations between positive (northward) and negative (southward) directions. Geomagnetic activity was Quiet to Unsettled.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) slightly increased above background levels, likely due to a flare on the far-side of the Sun. This remained well below solar radiation storm (S1) levels, however.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be Low, but with a slight chance of rising to Moderate. This risk will likely increase slightly day 2 onward (11th) as an old active sunspot from two weeks ago returns onto the disc.

Solar Wind / Geomagnetic Activity: The CME from the 9th may give a slight glancing impact on day 5 (14th), just beyond this forecast period however this is very low confidence and unlikely to be significant due to the CMEs weak nature. Current influence of the coronal hole sourced fast winds is expected to ease, with solar winds expected to be slightly elevated to background through the forecast period. By the end of day 4 (13th) another small CH22/- could begin to enhance solar winds a little but this is low confidence, and more likely on day 5 (14th). Geomagnetic activity is expected to be Quiet to Unsettled (Kp 3) at first with a slight chance of Active, probably trending predominantly Quiet (Kp 0 to 2).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to fall back to background levels, with no solar radiation storms expected.

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Met Office

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	1	1	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	5	10	10	10
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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